PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark Office, PCT
2011 South Clark Place Room CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 29 May 2001 (29.05.01)	
International application No. PCT/NO00/00294	**Applicant's or agent's file reference** P9970
International filing date (day/month/year) 08 September 2000 (08.09.00)	**Priority date** (day/month/year) 10 September 1999 (10.09.99)
Applicant LUNDBERG, Egil	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

02 April 2001 (02.04.01)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer Charlotte ENGER
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

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To:

BERG, André
Norsk Hydro ASA
N-0240 Oslo
NORVÈGE

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

Date of mailing (day/month/year) 26 October 2000 (26.10.00)	
Applicant's or agent's file reference P9970	**IMPORTANT NOTIFICATION**
International application No. PCT/NO00/00294	International filing date (day/month/year) 08 September 2000 (08.09.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 10 September 1999 (10.09.99)
Applicant NORSK HYDRO ASA et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).

2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.

3. An **asterisk(*)** appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

4. The **letters "NR"** appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
10 Sept 1999 (10.09.99)	19994381	NO	03 Octo 2000 (03.10.00)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

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003610063

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
P9970		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/NO00/00294	08/09/2000	10/09/1999
International Patent Classification (IPC) or national classification and IPC C25B11/12		
Applicant NORSK HYDRO ASA et al.		

NOT ENTERED

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
02/04/2001	19.12.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Del Piero, G Telephone No. +49 89 2399 8579

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NO00/00294

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
Description, pages:

1-5	as published			

Claims, No.:

1-8	as received on	07/12/2001	with letter of	06/12/2001

Drawings, sheets:

1/3-3/3	as published

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   - ☐ the description, pages:
   - ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8
	No:	Claims	

2. Citations and explanations
see separate sheet

V.

The present subject-matter does not appear to be disclosed in or fairly suggested by the state of the art of record.

The possibility of taking advantage of the anisotropy of the anode material by ensuring that the electric flow during electrolysis is in a direction other than the direction of forced compression (vibration) during the production of the anode justifies the acknowlegment of an inventive step.

Amended Claims

1. A method for producing a carbon electrode in which a "green" mass comprising particle material containing carbon and a binder undergoes a moulding process which causes the mass to be exposed to externally forced compression in one or more directions and to be subjected to a calcination process before use, characterised in that the carbon electrode is arranged so that, when it is in use, the dominant direction of electric current will mainly be oriented so that it does not coincide with the direction(s) of the forced compression.

2. A method in accordance with claim 1 for production of a carbon electrode, more precisely an anode for use in an electrolysis cell of Hall-Héroult type in which the anode is made with at least one recess for fixing to an anode suspender, characterised in that each recess is arranged directionally so that it mainly coincides with a direction mainly perpendicular to the direction(s) of the forced compression.

3. A method in accordance with claim 2, characterised in that the carbon electrode is calcinated before the recesses are arranged.

4. A method in accordance with claim 3, characterised in that the recesses are arranged by a mechanical milling or drilling process.

5. A carbon electrode produced from a "green" mass comprising particle material containing carbon and a binder where the green mass is exposed to externally forced compression in one or more directions and the carbon electrode is subjected to a calcination process before use, characterised in that at least one electrical connector is arranged in the electrode in such a manner that the dominant direction of electric current in relation to the carbon electrode, when it is in use, mainly does not coincide with the direction(s) of the forced compression.

6. A carbon electrode in accordance with claim 5, more precisely an anode for use in an electrolysis cell of Hall-Héroult type in which the anode is made with at least one recess for fixing to an anode suspender,
characterised in that
each recess is arranged in such a manner with respect to the extension of its depth into the anode so that this direction mainly coincides with a direction substantially perpendicular to the direction(s) of the forced compression.

7. A carbon electrode in accordance with claim 6,
characterised in that
it is calcinated before the recesses are arranged.

8. A carbon electrode in accordance with claim 7,
characterised in that
the recesses are arranged by drilling or by milling the calsinated carbon material.

Claims

1. A method for producing a carbon electrode in which a "green" mass comprising particle material containing carbon and a binder undergoes a moulding process which causes the mass to be exposed to externally forced compression in one or more directions and to be subjected to a calcination process before use,
characterised in that
the carbon electrode is arranged so that, when it is in use, the dominant direction of electric current will mainly be oriented so that it does not coincide with the direction(s) of the forced compression.

2. A method in accordance with claim 1 for production of a carbon electrode, more precisely an anode for use in an electrolysis cell of Hall-Héroult type in which the anode is made with at least one recess for fixing to an anode suspender,
characterised in that
each recess is arranged directionally so that it mainly coincides with a direction mainly perpendicular to the direction(s) of the forced compression.

3. A method in accordance with claim 2,
characterised in that
the carbon electrode is calcinated before the recesses are arranged.

4. A method in accordance with claim 3,
characterised in that
the recesses are arranged by a mechanical milling or drilling process.

5. A carbon electrode produced from a "green" mass comprising particle material containing carbon and a binder where the green mass is exposed to externally forced compression in one or more directions and the carbon electrode is subjected to a calcination process before use,
characterised in that
the dominant direction of electric current in relation to the carbon electrode, when it is in use, mainly does not coincide with the direction(s) of the forced compression.

6. A carbon electrode in accordance with claim 5, more precisely an anode for use in an electrolysis cell of Hall-Héroult type in which the anode is made with at least one recess for fixing to an anode suspender,
characterised in that
each recess is arranged directionally so that it mainly coincides with a direction mainly perpendicular to the direction(s) of the forced compression.

7. A carbon electrode in accordance with claim 6,
characterised in that
it is calcinated before the recesses are arranged.

8. A carbon electrode in accordance with claim 7,
characterised in that
the recesses are arranged by drilling or by milling the calsinated carbon material.